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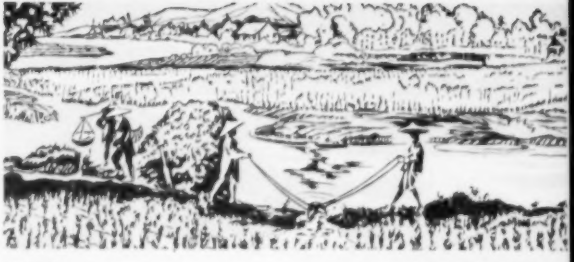

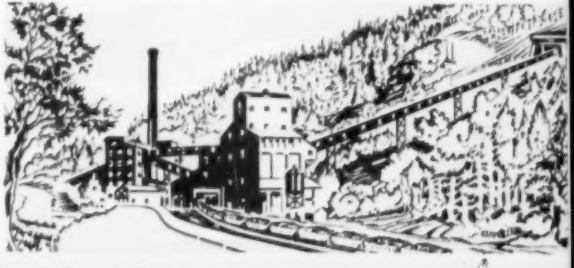

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VOLUME LIV FEBRUARY 1955 NUMBER 2

NORTHWEST JUNIOR GEOGRAPHERS DESCRIBE CLUB PROJECTS*

Reading, Pennsylvania

No corner on earth is too remote to be visited by the Northwest Junior High School geography club . . . either by field trip or by letter or, if all other means fail, via the vivid imagination of its ever-busy members (Fig. 1).

For an organization less than three years old, this junior geographers' outfit has compiled an enviable record. For one thing, it is the first junior high geography club in Pennsylvania to become affiliated with the Pennsylvania State Council of Geography Teachers and the National Council of Geography Teachers.

Since its formation, the club members have made 40 large world atlases for their school, using the maps from discarded geography books. Since many of the newer books do not have complete map sets as required in the geography course of study, the atlases are constantly in demand and the school district has saved considerable expenditure.

DISPLAY PROJECTS

The youngsters also have completed 40 booklets on mathematical geography and map projection for use in class. Both these items were displayed at the recent State Geography Council in Harrisburg.

The germ of the idea for a junior geography group was born in December, 1951, at a state council session. Miss Carrie E. Babb brought the idea to Northwest and called for volunteers who were "interested enough in geography to spend many hours doing extra work." Instead of the small number expected to volunteer, approximately 90 boys and girls turned out to join the club. Membership finally was set at 35.

Many new activities have been set into motion by the club. The members took a field trip to a nearby steel mill to learn how steel is made from molten metal to finished product. They keep an

*This short manuscript and pictures first appeared in *Public Schools* published by the School District of Reading, Pennsylvania, Spring, 1954.

up-to-the-minute current events file containing clippings from newspapers and magazines so that new geographical developments are available for reference.

One of the more intriguing activities for the pupils is their extensive foreign correspondence which brings scattered items of

Fig. 1. Tour World Via Imagination—So varied are the activities of the Northwest geography club that an entire assembly program was devoted this year to describing the functions of that organization for the student body. The program was termed "one of the best of the year" by boys and girls.

great interest from all portions of the globe into the Northwest classroom. The members take pride in reading their newly-received letters.

Study Other Countries

This keen understanding of other countries thru first-hand contact benefits the boys and girls in virtually every subject in the school curriculum.

But it is in the realm of imagination where the globe-trotters

FIG. 2. Prepare Atlases for Classes—Two of the numerous projects of Northwest Junior High School's geography club are shown here as pupils prepare the large atlases for class use and mount pictures in the new display racks. The atlases supplement the regular textbooks in the geography curriculum.

really hit their stride. They are engaged now in a cross-country trip with stops at virtually every major site in the United States. The voyage, of course, is strictly cerebral.

Letters have been dispatched to Chambers of Commerce thruout the land asking for pertinent information concerning the climate, employment possibilities, points of interest and housing conditions of their cities. "What does your city have to offer?" the children want to know.

File Replies

Their replies, carefully filed, show that other cities and towns are keenly interested in these future travelers. "Stop to see us when you arrive," many of the letters say.

The work of the club was described for the remainder of the student body recently at an assembly program. As the functions of the various committees were outlined, large cards bearing the list of accomplishments were erected on the stage.

The collection of information from far and wide which these geographers have amassed is astounding. Be it the dairy problem in Holland or the mining operations near Morgantown, they know about it (Fig. 2). Collectively, they're ready for practically anything.

As one member put it with a wistful look in his eye, "Boy, I'd sure like to get on one of those quiz programs!"

A MODERN GEOGRAPHY DEPARTMENT IN A SECONDARY SCHOOL

John A. Bonham
Joint Junior High School, West Chester, Pennsylvania

The first announcement of plans to construct a new $2,000,000 Junior High School in West Chester was made by the superintendent in October, 1952. Each department head was asked to meet with the members of his department to plan the type of room and equipment which would be needed for maximum efficiency.

We are fortunate in having a school board, superintendent and principal who recognize the importance of geography in our public school curriculum as stressed by the state course of study. Geography has become one of the major subjects taught in our schools partly because of the excellent guidance of the former department head, Miss Anna James, and partly because qualified geography teachers have always been employed. It was natural,

therefore, that the new geography classrooms should receive considerable attention when new plans were being drawn and considered.

PLANNING BY THE TEACHERS

The first step in considering the plans was to hold a general meeting of the geography teachers. They were asked to consider and list the equipment each of them felt would be essential for the teaching of geography. Naturally, they were to keep in mind the ages and needs of the children who would be using the equipment. They were also asked to keep in mind that a uniform plan for each room would eventually be required in order to economize on the cost of equipment.

After our plans were standardized and each teacher felt that the material included was essential to each of us and not just to one, our proposals were submitted to the principal for consideration. The principal sent our plans to the superintendent where slight modifications were made which improved our suggestions. These changes were adopted upon the advice of the superintendent and the architect.

THE SCHOOL BOARD

After the architect had estimated the cost of equipping the geography rooms, the plans were presented to the Joint School Board, composed of representatives of West Chester and seven adjacent townships, for consideration and approval. The board approved spending the money for the equipment but requested that it be informed in more detail as to how the equipment was to be used. The writer was asked to appear at the next board meeting to explain to the 42 members exactly how we planned to make use of this expensive material. The cost was estimated at 85 cents per pupil per year for 30 years, or about the price of one movie per pupil per year for 30 years. After the talk and demonstration, the writer was not certain whether the members were favorably disposed or not. There were no questions or comments—just silence.

From the general board, the plan and problem were referred to the property committee of the board. Four successive meetings were held with the chairman of this committee to decide again whether this or that piece of equipment was essential or could be eliminated. In addition, it was necessary to decide whether or not storage drawers, shelves, etc. should be made of wood or steel;

and whether they should be bought in units from a manufacturer, built by a local contractor, or made by the school carpenter. Another question which came up a number of times was whether or not certain pieces of equipment could be installed in future years when the board had more money. The writer seems to have convinced the committee members that the equipment which is not included in the plans for a new building, and included in the budget, is generally never purchased.

Another problem that cropped up continuously was the need of purchasing expensive blackout curtains for the geography rooms when the school plans provided for a visual education room for the use of the entire school. It was pointed out, first, that 60 per cent of the film library belonging to the school consists of geography films and that their use would require the geography department to hold classes in the visual education room a disproportionate part of the time. Secondly, it was brought out that children must be prepared in advance for viewing a given film. This preparation includes using such equipment as wall maps, bulletin board displays, atlases, filmstrips, slides and other equipment in the classroom. A follow-up is also neecssary following a film and this involves using equipment in the geography classroom. This preview and follow-up could not be effectively coordinated were we to use the visual education room.

Results in Equipment

We have received, or will receive in the near future, all the equipment requested. Our geography department now has five rooms which contain identical equipment. There are two men who teach five classes each of eighth grade geography (The United States), and two men who teach five classes each of seventh grade geography (Europe, Asia, Africa, and Australia). Two men teach one class each of geography, in addition to English and history, to seventh and eighth grade slow learners. A seventh man teaches one class of seventh grade geography in addition to four classes of history.

The five geography rooms have the following equipment:

1. Wash stand with hot and cold water for washing-up after working on models or projects during a class or study period.
2. A large bulletin board 42 inches wide which extends nearly the full length of one long wall.

3. A blackboard along the front wall of the room.
4. Blackout curtains (to be installed).
5. Map rails over the blackboard and bulletin boards.
6. Two banks of 10 drawers each. Each drawer measures 40 inches deep by 50.5 inches wide by 2.5 inches high. These are for storing blank and completed outline maps dealing with such subjects as rainfall, vegetation, population, climate or other geographic characteristics of specific areas. In addition, commercially printed maps of various regions and countries can be stored here flat. The surface of the drawers, forming an area 40 inches deep by nine feet long, is used as a drawing table and work area for the children.
7. Above the drawing table is a set of adjustable shelves (made by our school carpenter) mounted on the wall. These shelves are four feet high and nine feet long. They will be used to display material related to the work being done in the class. This generally includes maps, posters and models that have been made by the children.

The geography department now has all the equipment for a weather station, except for an anemometer. Just as soon as an outside location can be decided upon, and a shelter built, this will be utilized. There is also a tracing table which is for the general use of the department. Our new library will contain many books of reference or general information which will help the children.

Conclusion

Thru the efforts and understanding of our school administration and school board, we believe we are able to offer our children every opportunity to learn geography. The results will depend, of course, upon the teachers' guidance. But we are confident that our geography teachers are among the best trained, hard-working, and capable teachers available and can train students who will be well-grounded in geography.

SOME ASPECTS OF POPULATION TRENDS IN PENNSYLVANIA

E. WILLARD MILLER
The Pennsylvania State University, State College

The historical trends of population growth, the distribution of the people and how they make their living in the different parts of the state are basic questions to heed when considering the economic development of Pennsylvania. According to the United States Census of 1950, the state had 10,498,000 persons (Fig. 1). This places Pennsylvania as the third most populous state, exceeded only by New York and California. Of the people in Pennsylvania, nearly three-fourths are classified as urban dwellers while slightly less than one-fourth live in rural areas. There are approximately 3,800,000 persons employed in Pennsylvania, of whom about 35 per cent are in manufacturing, 18 to 20 per cent in wholesale and retail trade, 7 to 8 per cent in mining, 6 to 7 per cent in agriculture, 10 to 12 per cent in personal services, about 5 per cent in construction and 15 to 20 per cent in other occupations.

Population Trends

In the growth of the population of Pennsylvania three distinct periods can be recognized (Fig. 1). The first period was the settlement of the state with the removal of the frontier which lasted from the time of the first settlement in 1681 to about 1840. The second period from 1840 to 1910 was one of great growth in population due to the development of the state's natural resources and growing economic opportunities as a result of the change from an agricultural to an industrial economy. During this period total employment in all occupations rose from 345,000 to 3,130,000. The last period from 1910 to the present has been one of limited population growth. In the modern period the pattern of growth becomes complex as economic opportunity declines in certain areas and continues to expand in other regions.

Altho Pennsylvania was one of the last colonies to be founded, its population grew rapidly so that in 1776 it ranked third in size, and by 1790 its population was second only to Virginia. At this time when the population was 434,000, people were largely concentrated in the southeastern, south central and southwestern sections of the state. In tracing the advancing frontier after 1790, it

may be noted that by 1800 settlement had extended up the North Branch of the Susquehanna from the Wyoming Valley to the New York border. Between 1800 and 1820, the unsettled region of north-

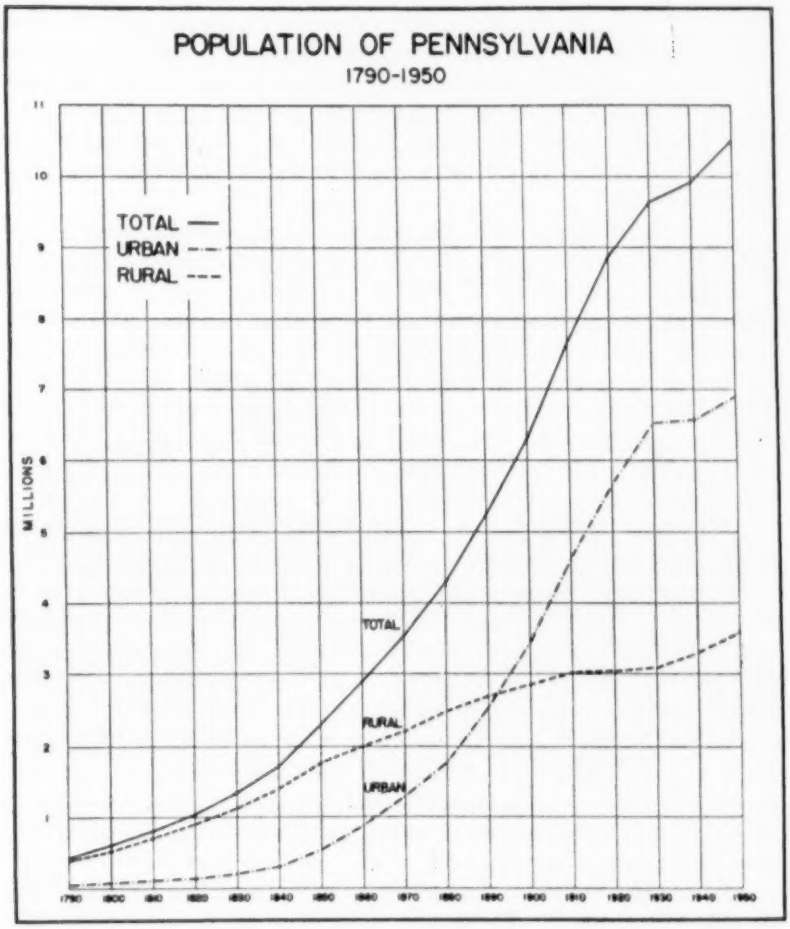

FIG. 1. Population trends in Pennsylvania from 1790 to 1950. Notice the increasing importance of urban dwellers after 1860.

western Pennsylvania, which was the last section of the state to be occupied, had diminished considerably in size.

By 1830 the vacant spaces in the northern tier of counties, the

northeastern counties and most of the northwestern counties had been fairly well settled. Only a very small area in the rugged Allegheny Mountains in what is now Cameron, Elk and Forest counties remained unsettled. By 1840 even these areas had a few small settlements, and the frontier, long in the process of being settled, had disappeared. At this time Pennsylvania's population had increased to 1,724,000 people. Each decade from 1790 to 1840 saw an increase of 27 to 39 per cent over the preceding ten-year period. This growth of population was largely due to the development of commercial activities and the agricultural and lumbering resources of the state.

Between 1840 and 1910 the population expanded rapidly reaching 4,282,000 in 1880 and 7,665,000 in 1910. Each decade experienced a population growth of 20 per cent or greater over the preceding decade. This increase would not have been possible without the large number of immigrants from Europe. The number of foreign born in Pennsylvania increased steadily to a peak of 1,483,000 in 1910. During the early portion of the period the immigrants came largely from Ireland, Germany and Great Britain. After 1890 immigration from northern Europe declined and was replaced by immigrants from southern and eastern Europe.

This growth of population reflected the expanding economy of Pennsylvania. It was truly a land of great opportunity. From 1840 to 1910 the value of manufactured products rose more than 1,000 per cent and the number of workers increased from 105,000 to 877,000. The development of the state's mineral resources was also phenomenal during this 70-year period. The mining activities attracted many people into areas that had little previous settlement. Employment directly in mining increased from a total of 4,600 workers in 1840 to 368,000 in 1910. As a result of this economic growth the modern industrial city came into existence and by 1910 more people lived in urban communities in Pennsylvania than in any other state.

Since 1910 the rate of population growth in Pennsylvania has slowed considerably. There are a number of factors that have caused this modern trend. While the overall economy continues to grow this development is largely limited to a few sections of the state. As the basic resources, particularly mineral fuels and forests, are depleted, these regions are now experiencing a decline in economic opportunity. As a result, people are migrating away from

these areas. However, to offset the decline in these regions expanding economic opportunities in manufacturing, wholesale and retail trade, transportation and communication and personal services have made it possible for the state's population to grow gradually but steadily in recent decades. For example, during the period 1910 to the present, employment in manufacturing and trade more than doubled. Thus, as the primary industries—particularly mining and forestry—are declining in importance, the growth of secondary and tertiary industries have maintained an expanding economy.

DISTRIBUTION OF POPULATION

The average density of population in Pennsylvania is about 250 persons per square mile, but the people are by no means evenly

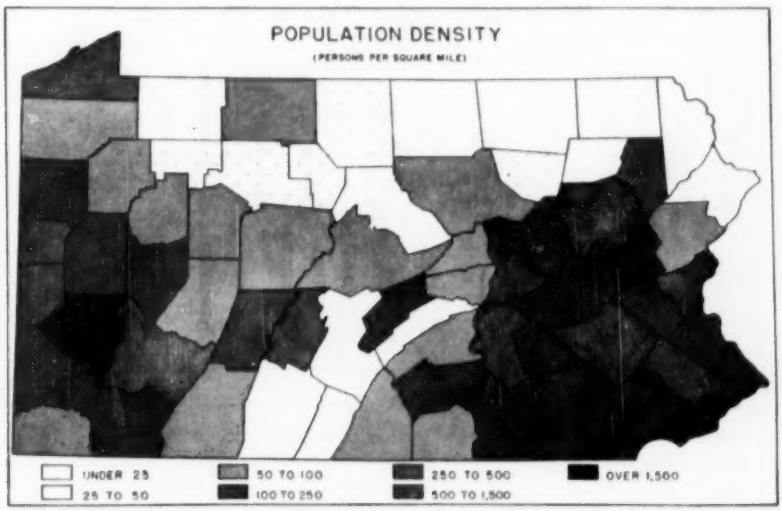

FIG. 2. Population density by counties in Pennsylvania. The southeast and southwest have notable concentrations of people with highest densities in Philadelphia and Allegheny Counties.

distributed over the state. The density varies from more than 16,000 persons per square mile in Philadelphia to less than five persons per square mile in the north central portion of the state. The numbers of people that inhabit a given area in a country where population can move freely is a resultant of many factors. Among these are the relief of the land, the healthfulness of its climate,

the productivity of its agriculture, the richness of its mineral wealth and the state of development of its industries and services.

In Pennsylvania three distinct regions of population density may be recognized on Figure 2. In eastern Pennsylvania there are 20 counties,[1] and in western Pennsylvania 12 counties with an average population density of more than 100 persons per square mile.[2] In contrast 35 counties of the central and northern portion of the state have average densities considerably below 100 persons per square mile. Environmental conditions and economic activities have clearly played an important role in the development of this pattern.

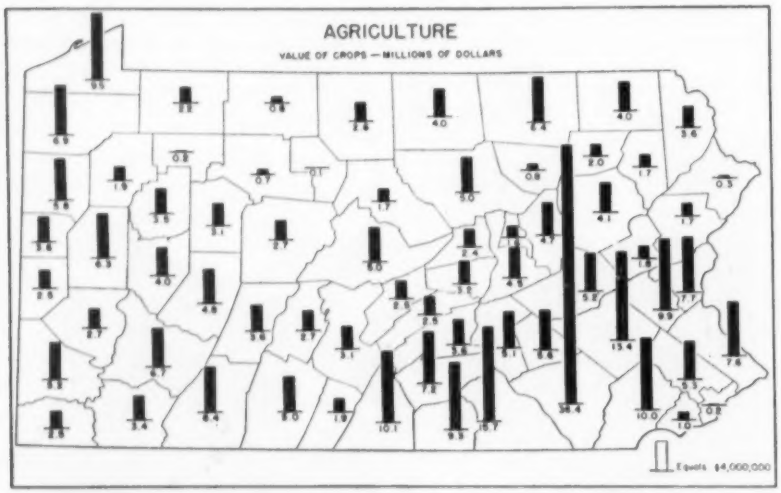

Fig. 3. Value of agricultural crop production in Pennsylvania in 1952. Notice the outstanding importance of southeastern Pennsylvania and particularly Lancaster County.

In eastern Pennsylvania the 20 counties with an average density of population of 100 or more persons per square mile had a total population of 5,587,000 persons in 1950, or about 55 per cent of the

[1] The eastern Pennsylvania counties with an average density of 100 or more persons per square mile are Philadelphia, Delaware, Chester, Montgomery, Bucks, York, Lancaster, Berks, Lehigh, Northampton, Dauphin, Lebanon, Northumberland, Schuykill, Carbon, Columbia, Luzerne, Lackawanna, Montour and Cumberland.

[2] The western Pennsylvania counties with an average density of 100 or more persons per square mile are Erie, Mercer, Lawrence, Beaver, Butler, Armstrong, Allegheny, Westmoreland, Blair, Cambria, Fayette and Washington.

state's total. The largest single concentration of population in Pennsylvania is in the city of Philadelphia which has a population of 2,071,000 or about 20 per cent of the state's total. Within this section there are also nine cities—Allentown, Bethlehem, Harrisburg, Lancaster, Chester, Reading, Scranton, Wilkes-Barre and York—which have a population of more than 50,000 persons. In these 20 counties more than 80 per cent of the total population are urban dwellers.

The large densities of population in eastern Pennsylvania are due to a combination of a good physical environment and a great

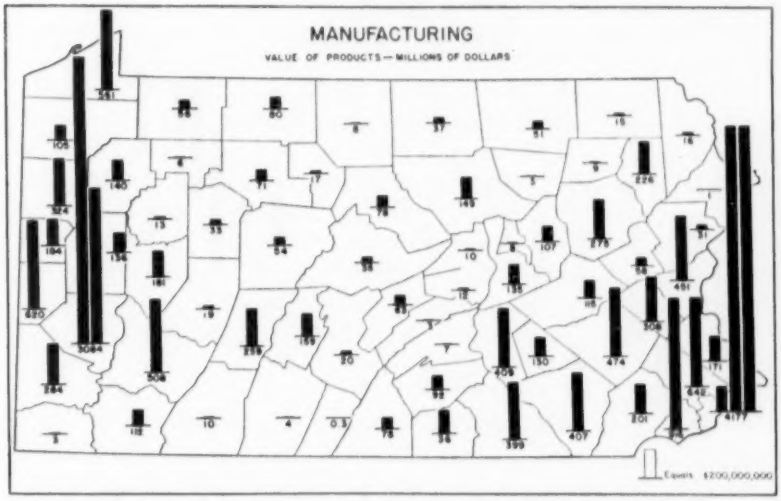

FIG. 4. Value of manufacturing products in Pennsylvania in 1952. Manufacturing has its greatest concentrations in Philadelphia and Allegheny Counties.

industrial economy. This area has about 60 per cent of the economic activities of the state (Figs. 3, 4 and 5). Consequently, there are about 2,000,000 persons employed in the region. However, thruout this region there are considerable contrasts in the types of economic opportunities. In the southeastern corner and extending westward including the Great Valley is the richest farming region of the state (Fig. 3). This same area is one of large urban development and is the most important diversified manufacturing area in Pennsylvania (Fig. 4). In the northern portion of this area, the large densities are primarily due to the great concentrations of

people in the anthracite mining areas (Fig. 5).

In western Pennsylvania 12 counties have an average density of population of 100 or more persons per square mile (Fig. 2). This area has a total population of 3,366,000 persons, or about 33 per cent of the state's total. The city of Pittsburgh with its 676,000 people, nearly seven per cent of the state's population, is the major city of this region. Besides Pittsburgh there are four cities—Altoona, Erie, Johnstown and McKeesport—which have a population of more than 50,000 persons.

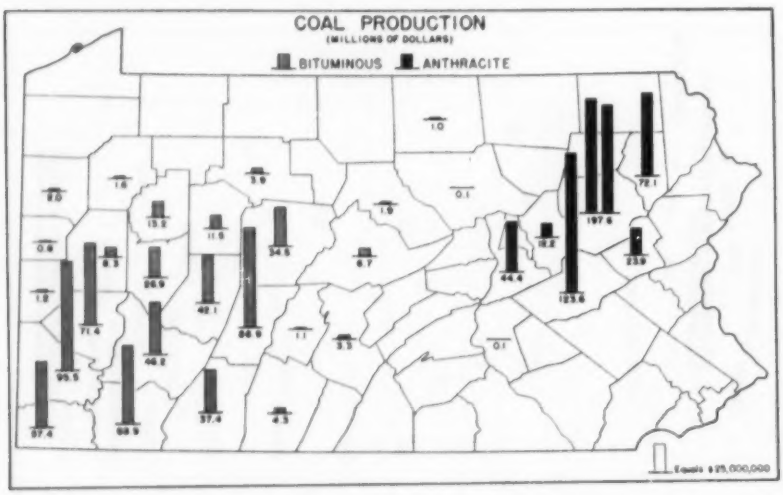

Fig. 5. Value of anthracite and bituminous coal production in Pennsylvania in 1952. Bituminous coal provides about 56 per cent of the value of coal mined in Pennsylvania while anthracite provides 44 per cent.

The concentration of people in these 12 counties is largely due to bituminous coal mining and industrialization in the river valleys of western Pennsylvania (Figs. 4 and 5). This area has between 25 and 30 per cent of the total economic activities of the state but has more than 60 per cent of the employment in the bituminous coal industry. Thus, the significant population densities are primarily due to the development of manufacturing and the exploitation of its mineral resources.

If the eastern and western counties with an average density of population of 100 or more persons per square mile are combined,

we find that these 32 counties with an area of approximately 42 per cent of the state have nearly 90 per cent of the total population and more than 80 per cent of the economic activities of Pennsylvania. In central and northern Pennsylvania there are 35 counties with population densities that vary from less than five to slightly over 100 persons per square mile (Fig. 2). This area has a total population of 1,441,000 persons or about 14 per cent of the state's total. These low densities of population are directly related to adverse physical environmental conditions and limited economic resources (Figs. 3, 4 and 5). The Allegheny High Plateaus with average densities of less than 15 persons per square mile is the sparsest settled area of the state. The only significant density of people in this section is found in the Bradford Oil Field of McKean County. The population of most of the northeastern glaciated section with its podzolic soils and short growing season is between 25 and 50 persons per square mile. In the Ridge and Valley Province of central Pennsylvania the population is concentrated in the valleys and the ridges are essentially unpopulated. As a result the southern ridge country has a low average density of only 25 to 50 people per square mile, while the limestone valleys and the Susquehanna lowland have a higher average density varying from 50 to over 100 persons per square mile.

Population Movements

Since the earliest period there has been considerable migration into and out of the state and between various parts of the state. Pennsylvania provided a large share of the pioneer groups which settled the midwestern and Pacific coast states in the eighteenth and nineteenth centuries. In more recent times, Pennsylvania has continued to lose population to other states. In 1930, there were 1,714,000 people who were born in Pennsylvania but living in other states, while only 964,000 born in other states were living in Pennsylvania. This was a net loss of 750,000, the largest suffered by any state.

From decade to decade there has also been considerable movement of population within the state. These population shifts are significant and important in relation to the economic status and welfare of a community or region for several reasons. First, most people who permanently change their home do so because of some strong motivating force, usually economic in character. They seek

opportunity, or they flee from lack of opportunity. Both immigration and emigration from a region produce definite economic and social problems. Second, study of population trends is a prerequisite to intelligent planning for sanitation, water supply, parks, schools, roads, public utilities and many other public and semi-public services. Studies of population distributional trends are not only necessary to provide for the welfare of the people, but are also of value to private interests, such as industries producing goods for direct consumption. Third, study of population trends is of value in gauging the effect of, and in looking toward possible guidance of, such trends themselves. These population trends may be analyzed, and those that are unfavorable checked while those that seem healthy may be encouraged.

One of the remarkable movements in population which is reflected from the earliest census in 1790 has been the change in the urban and rural population. In 1790, ninety per cent of the population was rural. Since then the proportion of urban to rural inhabitants, which was one to nine in 1790, has become more than two to one today. This urban migration is ever more striking when it is remembered that in 1790 practically all dwellers in rural territory were farmers, but with the development of modern transportation, a large number of industrial and commercial workers have moved in to areas surrounding the large urban agglomerations. Thus, they are able to dwell in the country while working in urban industry and commerce. At the present time less than 10 per cent of the state's population are rural farm dwellers.

Since 1800 the urban population has grown more rapidly than the rural population with the exception of only one decade, that of 1930 to 1940. The greatest percentage increase in urban growth occurred between 1840 and 1850 when the urban population increased by 76 per cent. Between 1930 and 1940, because economic opportunity was at a low ebb, the large concentration of people in cities found it difficult to obtain adequate employment. As a result there ensued a reverse movement of the population back to rural areas and small towns where living costs were less.

With the outbreak of World War II, the movement to the urban areas once again resumed, and since 1940 the population of urban areas has increased more rapidly than in rural areas. It is also of great importance that the largest urbanized areas are

increasing in population at the greatest rate. This is strikingly shown in the decade from 1940 to 1950 when only four counties in Pennsylvania—Philadelphia, Bucks, Delaware and Allegheny—had a growth of more than 100,000 people. The combined gain of these four counties was approximately two-thirds of the total population gain of the state.

Since 1940, there has been a decline in population in 26 of the 67 counties. The largest decrease was in the anthracite region with a loss by emigration of more than 130,000 people. Of the counties, Luzerne experienced the greatest loss with more than 50,000 of its inhabitants, about 12 per cent of its total population, migrating to other areas. There has also been a decline in population in a number of the counties of the bituminous coal region, notably Fayette and Westmoreland. Small decreases in population have also occurred in the forest counties and in the poor agricultural sections of the state.

Conclusions

The growth or decline of population in a region is normally a good indicator of the economic prosperity of that area. While the modern rate of population growth of Pennsylvania is lower than that of the nineteenth century, a steady population increase has continued in recent decades. However, because of the mature nature of the economy it cannot be expected that there will be a spectacular growth in the foreseeable future. The most striking changes will likely occur in the present distributional pattern as a result of internal migration caused by decline of economic activities in one area and growth in another section.

THE MEMPHIS AAG MEETINGS

"The Fifty-first Annual Convention of the Association of American Geographers will meet at the Hotel Peabody in Memphis, Tennessee, on April 11-14, 1955. The Association will be the guest of Memphis State College. All enquiries concerning excursions, exhibits, and local arrangements should be addressed to Professor R. W. Johnson. Room reservations should be made directly with Hotel Peabody."—*The Professional Geographer*, January, 1955.

SELECTING FREE MATERIAL FOR GEOGRAPHY OF THE HOME STATE

ADOLF STONE
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Assuming that a good geography text on any one of the 48 states of the Union is the exception rather than the rule, the California experience presented here might be duplicated in any other area of the United States.

Bibliography

Needless to say, a bibliography is especially important where students do not have access to a text. But a bibliography, no matter how complete, is no substitute for the chapter by chapter reading, or the study of diagrams, maps and pictures. It was therefore decided to assemble the many brochures, etc. available in and on the state in a pamphlet file. California, like any other state, is running over with roadmaps published by oil companies, by auto clubs and by chambers of commerce. In selecting rather than collecting good maps of the state it was found that most companies emphasize the service to the public over the promotion of a certain product. The Union Oil Company map comes closest to the standards of the professional cartographer. Copyrighted by Jefferson and Co., Denver, it offers good physical colors, almost a relief of the state. It is folded in accordion fashion enabling the students to open sections rather than to unfold the entire map in a crowded classroom and each section is handily indexed on the outside. A visiting teacher from Holland graded this map "much better than the average schoolmap." Since there is no limit to gasoline station maps each student not only has his own map in class but he can hang up a second copy on the wall of his study. A map folder available at Standard and Chevron stations adds to each map-page colored pictures with description and an index of cities and towns with yearly revised population figures. Autoclub maps were considered most helpful in the study of smaller areas, such as a lake, a town, a city. For the more specialized assignments on forest distribution, oil areas, croplands, etc., free materials are cheerfully furnished by

* Credit is due to the Long Beach City College Library for setting up the pamphlet file.

the respective associations, such as the tree farmers, oil research institute and fruit growers. Here, however, the promotional aspects should be pointed out to the student.

All statewide agencies are in the map business. Each state government has a department which takes care of the natural resources, with a forestry and a mining division, with a fish and game commission and with park and recreation supervision. In addition the state's department of education distributes material on the fauna and flora, on climate, etc. All California state agencies are listed in a Blue Book published yearly by the state government and mailed to all school libraries upon request. There are few resources, vegetable, mineral or animal, for which a state does not have official charts or maps with explanatory pamphlets. It seems no request is turned down as long as it is clearly stated. Then there are the many groups interested in conservation, such as, save the redwoods, wildlife protection, sportsfisherman and others, which bring their case to the public in many fine maps and charts, showing the decrease or the increase of the wealth of the state. Since the geographer shares the views of the conservationist all material on conservation is useful in a regional study.

The California State Chamber of Commerce has published a guide to various maps and charts. This guide astounds the reader with its list of low cost or even gratis distribution of the good information obtainable on all geographical aspects from the continental shelf to the highest peak.

Especially cooperative are the federal agencies operating in a state. The Bureau of Reclamation handling irrigation projects and the like tells the public about it with wall-size maps as well as with small folders and the United States Department of Commerce and the United States Department of Agriculture by their very nature are in the weather and climate business complete with temperature, frost and isobaric charts. The Commerce Department Weather Bureau distributes 48 brochures titled "Climate of the States . . ." from Alabama to Wyoming. And since the American public's interest in meteorology and climatology is on the increase since World War II, private companies, gas power, water, etc. give out charts and data on local rainfall, frost frequency, length of growing season, groundwater tables and water purity. Even a bankhouse, The Security First National Bank, joined the ranks with a yearly rainchart as a service to customers. And

a radio station, KFI, enlightens "listeners" with a landform map, which shows the temperature differences of high and of low lands.

Selection Often A Problem

Selection becomes most difficult, when a unit on economic geography is approached. The State's products are most "advertised" by businessmen, their chamber of commerce as well as by the county. It seems best to start with the State Chamber of Commerce. This institution in California maintains a research department, which publishes among promotional pamphlets a yearly "Economic Survey of the State." The information in this handbook was found dependable and not biased towards one or the other area or towards one or the other product. Of course for area projects the students will have to secure statistics from local sources, which probably again are best disseminated with the help of the teacher. In one particular case a chamber of commerce in a small county asked the local high school to prepare a report on the county and all inquiries mailed to Del Norte were answered by the school. Good production figures also can come from statewide business as California's Bank of America, which shows the economic growth of the state year by year in colored charts bound in booklet form.

Carry Thru A Project

A project as described here can go on and on. Our college library however has already a well-stocked pamphlet file, which in its breakdown follows the course outline unit by unit. Beyond that each student every semester works on his own collection, which pretty soon changes into a selection. Individual student orders for material add to the student's experience and as a rule students like to receive this type of mail. However, in some instances a collective request for "30" copies signed by the teacher will have better results. Whenever the material is available locally the student will find a way of getting it. Students, who in the meantime graduated into the teaching profession, assure the writer that their private California pamphlet files were not thrown away when the geography course ended and that the free pamphlets and maps are now enjoyed by their elementary and junior high school students in effective units on the home state.

A HEARTENING TEACHER*

J. RUSSELL WHITAKER
George Peabody College for Teachers

When asked recently to talk a few minutes about some quality of successful teaching, I began thinking of the traits usually considered and of former teachers who displayed them. My mind returned repeatedly to one man, one of the greatest teachers I ever had, and I began to ponder on the secret of his success. The conviction grew that he was an effective teacher because of unusual strength in one particular way: he put heart into his students. How did he do it? Perhaps he had a secret his students never discovered. But three years as a student of his and nine as a fellow teacher yielded, in memory, what seemed to be the reasons for his success.

He put heart into his students. The general student left his classes more hopeful, more interested in the world, more sure of his place in it. The professional student felt sure that this teacher would lead him at once into fruitful lanes where there would be work especially for him.

He set an encouraging example in many ways for the young men who were specializing in his field. He was careful in preparing for his teaching. For him teaching was consciously an art, as well as a science. He was a zestful teacher. He enjoyed his work. Students caught that enthusiasm. Said one, "I could sit and listen to him lecture all day." He was a productive scholar. A favorite statement of his, "One article a year from each geographer would work wonders in the profession," set a standard that large numbers of his students have conscientiously followed. He was an active leader in professional organizations. When his students attended their meetings they could be proud that he was there and clearly in the foreground.

Altho a man with perhaps more than the average number of personal trials and disappointments, he laid no burdens on others by complaining. He consumed his own smoke. He never dampened the ardor of younger men by pessimistic predictions. Even when forced by premature senility to early retirement he continued to be an inspiration.

He said what he had to say in simple words. He avoided techni-

* Ray Hughes Whitbeck, 1871-1939. Professor of Geography, University of Wisconsin, 1909-1937; editor, JOURNAL OF GEOGRAPHY, 1910-1919.

cal terms whenever possible. His simplicity was certainly based in part on his desire to be helpful; to encourage. In his teaching he never resorted to browbeating and sarcasm. Said he, "All a college student needs to know is where he stands. It is unnecessary to rebuke or chide him."

No one feared him. He was always kind and self-possessed. Students could be absolutely sure that his response would be gentle and considerate no matter what happened. Only once in class did I see him rebuke a student, and that was when that student had been unfair in his criticism of a seminar report of another.

He was sparing of criticism but ready with praise. He tempered his comments to the strength and the needs of the student. He found good in the weakest paper as well as in the strongest, and he was able to make helpful suggestions for the improvement of both.

His office door was always open. At any time of the day from eight until five he was available if not in class. At any time a student was welcome to go in and talk about anything on his mind. He had the ability to listen and to ask questions that showed he was truly interested in what the student was telling him. No shuffling of paper, faraway look, or shifting of his chair to indicate that the interview should be ended.

He was alert to opportunities to launch his students on their chosen career, and to him that career should include writing for those who were specializing in his field. He arranged, for example, to publish the papers of a seminar class as one complete number of the Journal of Geography and edited the papers himself. Anyone who has assessed the mine-run output of a seminar can be sure that he had a great deal of editing to do.

He was interested in the total welfare of his students. He loaned one young man the money on which to get married; indeed, offered it unsolicited. There was never a suggestion that getting married on borrowed money might possibly be an unwise step.

It was disconcerting to a beginning graduate student to have this man ask him to clip out the valuable parts of a set of magazines for permanent file and to throw the rest away. This was a display of confidence that was almost too much for a beginner. But it was heartening at that.

Perhaps *there* lay the innermost secret of this teacher's ability to put heart into his students. He believed in each student's ability and made the student aware of that confidence in him. He was a

living example of what Henry Drummond had in mind when he wrote, "The people who influence you are the people who believe in you . . ." and "If we try to influence or elevate others, we shall soon see that success is in proportion to their belief in our belief in them."

TEACHERS PLAN A FIELD TRIP

ELOISE S. RANDALL
Silas Wood School, Huntington Station, New York

"Learning by Doing," John Dewey's philosophy, might be changed to "Learning by Seeing" as a philosophy for the field-tripper.

A three-week field trip thru the Great Lakes and then by train to Hudson Bay is packed with geographic patterns, associations and functions. Those of us from the east coast who knew of the mid-west and inland cities only thru reading and pictures, had the thrill of seeing real live landscapes.

GREAT LAKES

Niagara Falls. A train trip to Buffalo and a day at Niagara Falls started the tempo of the days to come. Former visits to Niagara Falls had lacked the appreciation now gained by learning some of the geologic facts about this vicinity.

Four days on the *S. S. South American* cruising the Great Lakes gave the group time to get acquainted with each other and to talk with fellow passengers. We had time for meetings in which reports gave pertinent information of places we would be visiting.

Soo Locks. What an experience, even tho it was 1:30 at night, to go thru the Soo Locks! We watched as our ship proceeded into the lock and the water came in to raise it the necessary 21 feet to proceed from Lake Huron into Lake Superior. Pleasure ships such as the *S. S. South American* go thru the single Canadian lock. All the commercial traffic of the Great Lakes Freighters goes thru the four American locks.

Paper Mill. Our boat docked for a few hours at Munising, the center of the pulp, paper and wooden ware industries. A visit to a paper mill proved to be very informative as we watched the trans-

forming of logs into fine paper, following each step along the way.

Iron and Steel Industry. After traveling over Lake Erie, Lake St. Clair, Lake Huron and Lake Superior, we disembarked at the terminal port of Duluth where we had the opportunity of learning something about the steel industry.

Pictures can never adequately portray the spectacular performance of steel-making. To watch an open hearth furnace being charged; to look into the furnace thru a peep hole and see the boiling, bubbling liquid steel; to watch the men and machines at their various tasks; and then to see a furnace tapped, provide impressions which one cannot secure from pictures or word descriptions.

Less spectacular but equally as interesting was following the process of rolling the steel ingot into rods, of pulling them into the size of wire and of making this wire into fencing or nails.

The Mesabi Iron Range, 70 miles from Duluth, produces some of the richest iron ore in the world. Here we learned of the experimental work with taconite, a layered bed of rock containing magnetite instead of hematite. It is 25 per cent to 30 per cent iron in the form of tiny particles of oxide diffused thruout the rock. The process of transforming this low grade rock into a high grade ore for use in making steel is long and expensive.

En Route to Churchill

As we boarded the train for Hudson Bay at Winnipeg our group of 20 became a part of the Seventeenth Annual Tour to Churchill. There were over 200 people starting on the adventures of the Northland. The train was to be our home for a week, where we ate and slept as we traveled north across the Laurentien Shield where the landscape of many lakes and heavy, black clay soil were evidences of the glacial history of this section. Before arriving at Churchill on Hudson Bay we would travel across the taiga, tundra and muskeg areas. We could see the trees becoming more sparse and stunted in growth. The telephone poles were placed in tripod fashion because that is the only way they can stand in the swampy and frozen ground. The telephone poles marked off the miles by being numbered. For 35 miles we traveled across the "Barrens" where the country is sparsely treed and the ground is covered with moss.

Flin Flon. An interesting stop was at the mining town of Flin Flon, only 25 years old. The town is built near the copper and zinc

mine which is the reason for its existence. It is constructed on rocks where it is impossible to dig or where there is no soil. Sewer and water pipes are encased in wooden rectangular boxes which also serve as sidewalks. These encasements stand about three feet high. Wooden stairs are public thorofare for the various levels. Snow sometimes comes in September. One-third of the population of 13,000 is under the age of 20.

The Pas. The Pas, pronounced "the pa," is the Gateway to the North. All freight and every visitor to the north must pass thru this town. The Pas has a history that extends back 262 years as compared with Flin Flon's 25 years. The railroad extends 510 miles from The Pas to Churchill. It was completed in 1929 for the purpose of shipping grain from the prairie by way of the Port of Churchill.

CHURCHILL

Churchill is located on a level piece of land. Very old trees of willow and birch are only three feet tall. Main Street is wide but dusty and stony. The Hudson Bay Company has its store here as well as in every little town in the Northland. Indians still trade furs. Two or three other stores, a school, Post Office and Igloo Theater, a Catholic and a Protestant mission church and a couple of hotels comprise the center of town. At the docks are the grain elevators towering 210 feet high. Three ships were being loaded with grain. Another ship was being loaded with supplies to be taken to posts along the coast north of Churchill. The navigation season is 98 days, from July 25 to October 31.

As we looked out over Hudson Bay we could see the white whales. Later we visited the factory where the whales were cut up, blubber tried out for oil and the meat chopped and frozen.

In this warm weather how could one imagine the cold, windy season when in a minute of exposure a nose could be frozen? It was impossible to understand the hardships these people have, simply to exist in such a rugged climate.

VALUES

On such a trip as this, one "sees" the way people live, the influence of topography and climate on their lives and also the development of a territory.

Of what value is such a trip to an elementary teacher?

1. The contacts we made, within the group, among other travelers, with other teachers, with townspeople where we stopped and with business people were a big part of our worth-while experiences.

2. The pictures and material we were able to collect will be useful time and time again.

3. The definite information we gained of various processes in industry will lead to better teaching of many topics.

4. The topographic and geologic facts of sections of the country are important background knowledge for a teacher.

5. The greater awareness of items related to places visited as they appear in the news will help keep a teacher up-to-date.

Any school curriculum will be enriched by an individual with such a background of material. Again I say, take a field trip! It is fun. You see and learn much that is so worth-while and that cannot be told in words.

TEACHING MAP PROJECTIONS IN INTRODUCTORY GEOGRAPHY COURSES

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Hunter College

Most introductory geography courses at the college level include some work on map projections. Traditionally, 10 or 12 projections are described in terms of the grid pattern; their specific properties and their advantages and disadvantages are discussed; and for some of them the methods of construction may be considered briefly. How well does this serve the needs of the students— either those who decide to specialize in geography or the far greater number who will never take another course in the subject?

Certainly students who plan to become professional geographers will need detailed training in the use and construction of map projections. From time to time they may be called upon to prepare or to supervise the preparation of maps for a variety of purposes, and selection of the most suitable projection is one of the first steps to success. If the geographer does his own drafting he must understand the methods of constructing various map projections. Will he be able to function in these ways on the basis of what he learns

about map projections in his introductory geography course? Probably rarely, if ever. He must have specialized training in cartography.

In most introductory classes, however, the great majority of the students will not decide to become geographers. They will not need training in the selection and construction of map projections, for it is very unlikely that they will ever be map *makers*. But they will probably be map *users*, whatever their walk in life; and the goal of our teaching should be to help them make better use of maps and understand not only some of the special functions maps can serve but also some of their limitations. In other words, we should try to make them realize that "maps can save the mind an infinitude of words" and can be a valuable tool in many fields of activity. At the same time they must learn that maps can sometimes be "liars" in some respects if they are taken at face value; and we must show them how to be aware of the distortions that can be so misleading. Will the average student be helped in these respects by memorizing the appearance, properties and methods of construction of a selected list of projections? Will it be of any practical value to him, for example, merely to know whether the parallels and meridians are curved or straight lines; whether the curved lines are arcs of circles or some other type of curve; whether a given projection is best suited for large-scale or small-scale maps; etc.? Will such facts, *per se*, help him to appreciate the distortion involved in a given projection? Will he remember these facts long? Will they help him to understand an entirely new map projection that is not on the list studied in class?

If the answers to these questions are all negative, as the writer believes them to be, then college geography teachers need to find some new way of teaching map projections in their introductory courses, something more than a collection of facts about certain selected projections. What we need to teach is a method of comparing the grid pattern of *any* map projection, whether familiar or not, with the grid pattern of the globe. The student must learn to observe how the map grid differs from the globe grid in the spacing and shape of the lines and in the angles at which they cross each other; and to understand that distortions of the grid result in similar distortions of the shapes and relative sizes of earth features mapped on that grid.

With this in mind the writer has prepared the following ex-

planatory material and laboratory exercises on map projections. All that has to be memorized is the grid pattern on the globe. The rest is a matter of observation. It is suggested that the student choose the examples asked for from a selected list of projections, of which the following are useful and readily obtainable: Orthographic, Stereographic, Gnomonic, Polar Equidistant, Mercator, Homolographic, Sinusoidal, Homolosine, Conic.

Globe Grid versus Map Grid

Only a globe can represent the earth's surface features correctly with respect to all of the following points: area, shape, scale, direction. On a globe areas are shown in their proper size relation to each other; the shapes of earth features are correctly shown; the scale is the same everywhere; and the compass direction from any point to any other point is true. These correct space relationships are represented diagrammatically by the pattern of the grid made by the parallels of latitude and the meridians of longitude. The parallels are parallel circles, equally spaced and of shorter and shorter circumference toward the poles. Parallel 60° North or South is only half as great in circumference as is the equator. The meridians, crossing the parallels at right angles, are half circles converging at the poles and spreading apart at the equator, where they are twice as far apart as they are on parallel 60° North or South.

When the earth's surface features are to be shown on a flat map, the first step is to draw the grid system of the globe on a plane surface. Points of known latitude and longitude can then be plotted on the grid and connected to show the outlines of continents, rivers, lakes, etc. There are many different ways of drawing the grid of a map, each way producing a characteristic pattern called a *map projection*—"a systematic drawing of lines representing meridians and parallels on a plane surface, either for the whole earth or for some portion of it."[1]

In transferring the earth's features from the curved surface of the globe to a flat map there will inevitably be more or less distortion. Some parts of the picture will have to be stretched with reference to other parts. As a result, no single projection can duplicate

[1] C. H. Deetz and O. S. Adams: *Elements of Map Projection* . . . . U. S. Coast and Geodetic Survey, Spec. Publ. 68, 4th ed., Washington, D.C., 1934.

the globe's accurate representation of area, shape, scale and direction. Some projections are inaccurate with respect to all of these features. Others are devised so as to give a true representation of one of them at the expense of marked distortion of some of the others. Careful examination of the grid pattern will give clues as to the types of distortion involved, for the grid of the globe will be altered in one or more of the following characteristics: the spacing of the lines; their shapes; the angles at which they cross each other. In the following exercises you will observe examples of such variations in the grid pattern, with the purpose of discovering what they can reveal about distortions of scale, of size and shape of earth features and of direction.

A Study in Scale Variations as Revealed by the Grid Spacing

1. A degree of latitude is essentially the same in length—about 69 miles—everywhere on the earth. This is revealed on the globe grid by the essentially equal spacing of the parallels. One degree of latitude (69 miles) is represented by the same distance everywhere on the globe. That is, the north-south scale is constant. If on a map the spacing of the parallels is not equal, the north-south scale varies, being larger where the parallels are farther apart and smaller where they are closer together.

Exercise: Name a projection on which:

a. The north-south scale, measured along the central meridian, is constant (i.e., the parallels are equally spaced).

b. The north-south scale, measured along the central meridan, is larger (i.e., the parallels are farther apart) near the poles than near the equator.

c. The north-south scale, measured along the central meridian, is larger near the equator than near the poles.

d. The north-south scale is larger near the east and west margins of the map than near the center (i.e., the parallels spread apart toward the margins).

2. A degree of longitude varies in length from about 69 miles at the equator to half this value at 60° North or South, and to zero at the poles; but everywhere along any one parallel of latitude the length of one degree of longitude is the same. This is revealed on the globe by the equal spacing of the meridians along any single parallel. That is, the east-west scale is constant. If on a map the spacing of meridians along any one parallel is unequal, the east-west scale varies along that parallel, being larger where the meridians are farther apart and smaller where they are closer together. If the meridians fail to converge, or converge at a rate different

from that on the globe, the east-west scale will be different in different latitudes.

Exercise: Name a projection on which:

a. The east-west scale, shown by the spacing of meridians along any one parallel, is larger (i.e., the meridians are farther apart) near the east and west margins of the map than near the center.

b. The east-west scale, shown by the spacing of meridians along any one parallel, is smaller near the east and west margins of the map than near the center.

c. The east-west scale is larger near the poles than near the equator, because the meridians are parallel to each other.

d. The east-west scale is larger near the poles than near the equator because the meridians converge poleward less rapidly than on the globe (i.e., on parallel 60° North or South they are more than half as far apart as on the equator).

3. Some map projections are constructed so that distances are correct—i.e., the scale is the same—in all directions from the center of the map. Such *equidistant* projections are of much value in mapping air routes from one city, placed at the center of the map, to other parts of the world. However, even on an equidistant projection distances in directions other than those that radiate out from the center of the map will not be correct, for *the scale can never be the same in all parts of a map,* no matter what the projection. On large-scale maps of limited areas the variations in scale are negligible, but for maps of large parts of the earth they may be great. The scale given for such a map is, therefore, only a *nominal* one, representing the scale of the globe from which the map was theoretically projected. Mileages measured on the map in terms of this scale will, therefore, be more or less incorrect, as will be illustrated by the following observations:

Exercise: For the distances indicated below, measure the true mileage on the globe and the apparent mileage in terms of the nominal scale on maps on the Homolosine and Conic projections:

a. Parallel 60° N., between meridians 70° W. and 120° W.

b. Meridian 100° or 105° W., between parallel 50° N. and the Arctic Circle.

A Study in Area and Shape Relationships

1. If in some parts of a map both the north-south and the east-west scales are larger than they are in other parts of the same map, the relative sizes of areas will not be truly represented. Where the scale is larger the sizes of earth features will appear disproportionately large in comparison with the sizes of features shown in other parts of the map. When parts of one feature, such as a continent, are thus enlarged relative to other parts, the shape of the feature as a whole is distorted.

Exercises:

a. Greenland is about one ninth as large as South America. Observe their relative sizes on the globe. What is their apparent size relation on the Mercator projection? Explain, in terms of the grid pattern.

b. Name another projection on which Greenland looks too large in comparison with South America. Explain, in terms of the grid pattern.

c. Compare the shape of North America as shown on the Mercator projection with that shown on the globe. Summarize your observations and explain them.

2. Sometimes decreases in the north-south scale are compensated for by corresponding increases in the east-west scale in that same part of the map. Thus the relative sizes of areas are correctly shown, altho their shapes are distorted. (For example, a square, two inches by two inches, with an area of four square inches, can be changed into a rectangle four inches wide and only one inch tall. The area will still be four square inches, but the shape will be shorter and broader.) This is one way of producing an *equal-area* projection. On such a map, as on a globe, a square inch in any one part of the map represents the same number of square miles as does a square inch in any other part of the map. When it is important that the correct relative sizes of earth features be represented, as in the study of areal distributions, an equal-area projection should be used.

Exercises:

a. Explain why the Mercator projection is not equal-area.

b. Explain why the Homolographic projection is equal-area. Compare the relative sizes of Greenland and South America as shown on this projection and on the globe.

c. Compare the shape of North America as a whole as shown on the Homolosine projection with that shown on the globe. Explain in terms of the grid pattern of the map.

Other Shape Distortions

Shape distortions result not only from variations in scale (see above) but also from variations in the angles at which the parallels and meridians cross each other. On the globe they always cross at right angles. When they cross at oblique angles, the shapes of earth features will be distorted as if they had been "pulled on the bias."

Exercises: Using the Homolographic projection as an example, answer the following questions:

a. Which parts of the map are freest from angular shape distortions?

b. Which parts are most affected?

c. Note that on a globe the space bounded by parallels 20° and 40° S. and meridians 0° and 20° W. is the same shape as that bounded by 20° and 40° S. and 160° and 180° E. Draw the shapes of these two spaces as shown on the Homolographic projection.

d. Compare the shape of Australia as shown on the Homolographic projection with that shown on the globe. Write a statement summarizing your observations.

c. How could a Homolographic projection be centered so as to show Australia's shape more accurately?

f. Why, on the Homolosine projection, are most of the continents relatively free from this type of distortion?

A Study in Directions

It is customary to orient a globe or a map with north at the top, and so we have come to think of north as *up*. Actually this is not at all necessary. In the first place we can hold the map or globe in any position we choose, and in special cases maps are often purposely oriented with north somewhere other than at the top of the page. Moreover, on some map projections it is impossible to have north at the top (see exercise *a* below), and sometimes more than one direction is represented along the top edge of the map (see exercise *b* below). This means that when we want to find which directions on a map are north, south, east or west, we cannot automatically find the answers in terms of the edges of the map, saying that going toward the top takes us farther north, toward the right takes us east, etc. Instead, *we must examine the grid pattern of the map.* The same is true when we want to discover the relation of two places to each other in terms of compass direction. If place A is farther north on the grid than place B, and at the same time farther west, A is northwest of B, *no matter where it is on the page.*

Exercises:

a. On a map of Antarctica, in what direction are you going as you move from the center of the map toward: 1. the top edge of the map; 2. the bottom edge; 3. the right edge; 4. the left edge. Explain your answers.

b. On a map of Eurasia on Lambert's Azimuthal Equal-area projection, in what direction are you going if from a point about an inch below the top edge of the map you start to move toward the top: 1. along the central meridian; 2. at the extreme right of the map; 3. at the extreme left. Explain your answers.

c. Using the same map, answer the following questions:

1. Edinburgh is nearer the top of the page than is Copenhagen, yet it is not north of the latter. What is its direction from Copenhagen?
2. In the same way determine the relation of Calcutta to Mandalay. Compare their relative positions on the page with those of Edinburgh and Copenhagen. Explain the difference.
3. In the same way for the following pairs of places determine, from the grid, whether the first place is north, northeast, east, etc., of the second: Paris and Stockholm; Oslo and Bucharest; Teheran and Tokyo; Budapest and Stockholm; Manila and Seoul.

d. Using a map of the United States on the Polyconic projection determine, by means of the grid, the state that extends: 1. farthest north; 2. farthest south; 3. farthest east; 4. farthest west.

e. Would it be any easier, in answering questions c. and d. above, to determine either north-south or east-west directional relationships on: 1. the Mercator projection? 2. the Homolosine projection? Explain your answer.

THE GEOGRAPHER AS COORDINATOR

W. A. BROWNE
Missouri State Teachers College, Kirksville

The geographer is well equipped to serve as coordinator in human affairs. The very nature of geography, treating as it does with earth, man and the multiplicity of human activities as related to the environment, places a student of the field in position to view the world panorama. In this orb the earth-man relations form the mosaic, and the various parts fit together as an orderly whole. This holds true in all stages of human advancement—from savagery to the most highly civilized peoples. In the first, in which man has little control over natural forces, but necessarily deals with them, a harmonious relationship is highly significant; in the latter, in which man controls most of his environmental factors, it is even more important that these forces of nature be dealt with properly. Without some degree of coordination the forces of nature tend to destroy man; only as man approaches perfect coordination of natural forces and human endeavor can he hope to attain maximum efficiency.

Whether willed or not society is continuously drifting into a state of interdependency. At the present time no area or country is a unit unto itself. No single continent possesses a complete list of the materials classified as essential. Neither does Great Britain possess the particular skills of Mexican potters, nor the United States the bone-straightening technique of certain Amazonian Indians. Numerous are the examples which might be cited. Hence, we must look to the earth at large for a complete list of the world's goods and for other approaches to the highest human welfare.

Two conditions are largely responsible for this state of affairs—the unequal distribution of resources with respect to human needs and the lack of uniformity in human advancement over the earth. The idealistic goal, of course, is to organize the heterogeneity of world materials, information and skills into a homogeneous working unit. But these entities are ever in a state of change. Even if complete coordination were achieved, it would have to be altered from time to time in order to keep abreast of world evolution. Discoveries, inventions and the development of new skills cause changes in the world pattern, thereby creating need for change in the existing organization.

A gigantic task lies ahead in man's effort to secure perfect coordination. But any attempt to attain such a goal would of necessity employ services for which the geographer is eminently fitted. "We have the unique ability to see patterns," writes Wilson. "We must recognize our primary interest as being the discovery, identification, analysis, and synthesis of earth patterns." During the recent world struggle and also in the even more general and enduring struggle between the mounting world population and world resources, geography has been put to a supreme test. But writes Mr. Light of the *Geographic Review:* "Geography, one might almost say, has been lying in wait for this moment." Just how far geography is able to succeed in solving this man-resource problem is yet to be seen, but for the geographer to fulfill his mission satisfactorily he must be more active in fusing geographic knowledge with widespread human activities.

Background of Coordination

That there is particular need for such work in coordination is not to be questioned. For centuries geographers have served as unannounced coordinators of human affairs. Whether so recognized or not many accomplishments of the ages fall into this category. Work in early mapping, in land utilization among the Mediterranean peoples, in work of discovering and charting courses of commerce, in ferreting out land routes for trade and movement of goods may be so classified. In the period of great discoveries and subsequent settlement "Geography was the service arm of the great movements of civilized man about the earth." And as more and more resources are utilized the demand grows for better methods of securing, moving, processing and utilizing these materials.

Establishing the Fact

A basic problem in this task is that of establishing the fact that significant relationships exist. By reaching back into history we can secure any number of parallels for this purpose. The Egyptians developed the practice of planting their crops after the annual Nile floods had supplied moisture to their arid valley, but the Babylonians, without the advantage of annual floods, learned to divert the life-giving waters of their rivers onto their parched fields. The medieval baron selected his productive lands for cultivation, but placed his castle in a naturally protected place or where

a moat might be girded about it. The occupation of semi-arid grasslands by nomadic peoples and the utilization of the humid, productive plains by about 90 per cent of the earth's inhabitants have followed the same channel. It is not the result of fortune or accident but commonplace, judicious procedure which has been followed in utilizing the humid subtropical lands for cotton, the intermediate prairie lands for wheat and the humid low latitudes for sugar cane, coffee and cacao. Similarly, human wisdom has led to the establishment of great industrial centers at places convenient to sources of power. Commonly woodworking cities are at vantage points near forests, and most great commercial centers are on harbors accessible to ocean transport.

Another objective has been the searching out of environment in which effort would be more and more remunerative. The historian traces in detail the great invasions from inner Asia eastward to the heart of the loessial plains of China and westward to the gates of Orleans. In these treatments the ramifications are varied, the facts numerous, but one basic thread—nomadic hunger—ties all together. The land of Khan luxuries on the one hand and that of Hanseatic accumulations on the other were areas in which, it was hoped, this desire of the nomad could be satisfied. If Hitler, as was reported, viewed the Ukraine as a land in which Germany could "wallow in plenty," he was seeking to satisfy the same appetite.

In reference to New World colonization the orator of today enthralls his listeners by emphasis upon virtues, principles and liberties; but in the age of colonial inception the English composers seemed to have a better grasp of human qualities when they played upon such terms as gold, rubies, diamonds and viands. These phenomena, tho elementary in geography, lie beyond the horizon in most areas of thought.

Any number of examples may be taken from developments in our country. Jamestown, Virginia, located in opposition to the sensible instructions carried to the New World, flourished for a time but early came to naught. The site is now represented primarily by a marker, which might be accepted as a monument or symbol of man's failure from running counter to earth relations. In the same period was established the village of Bath, North Carolina, at the head of an estuary and not far inland from Jamestown. From that time it has served as a small community. For long the village was an agricultural center and port for small craft, with

fishing of some importance. More recently lumbering has supplemented these early activities. Today the presence of a consolidated school lends culture to the general complacency of life. Also in the same period a similar village was planted at the mouth of the Hudson. This last establishment has never ceased to grow. New York now holds a place among the great urban centers of the earth, with all the complexities and perplexities that metropolitan development incurs.

That there should have been extreme variation in early considerations and in the development of these three vastly different establishments is to be expected. And apparently any geographer could have gone far in analyzing the situations and in directing activities into helpful channels. With such procedure, had the first site been selected at all, doubtless it would have been done as a temporary expedient and would have been so considered in planning and constructing. Any type of street pattern and temporary structures might have served well. In the second case the builders seem to have followed a logical development for the type of area in which Bath is located. The village of some 400 is appropriate to its rather limited area of sterile soils, enmeshed with considerable swamp land, forest of moderate quality, and of only scant access to the ocean. The town pattern conforms to the highway as the chief thorofare, so that a large percentage of the people are in view of the passing traffic; many of the early structures are in a good state of repair, and, with little or no alteration, are considered practical for present use. These include homes and also a church, the oldest in North Carolina. As for New York, no one would assume that, at the time of inception, planning could have provided all the necessary intricacies of this complicated metropolis. Had it not been impossible, it would have been impracticable to have done so. But from its harborage, adjacent to good land and other resources, and its juxtaposition to the American and European coasts one might have surmised a healthy growth. And further, it is believed that an alert geographer would have visualized the Hudson-Mohawk depression as a future connecting link with the great interior of the continent.

Present Situations

Turning to present situations we find an ever expanding need for the coordinator. The prevalence of nationalistic and imperial-

istic tendencies in a world rapidly becoming crowded for living space brings great problems into focus. The present problem of the New Israel is both timely and pertinent. Apparently most thought on this topic gives little or no consideration to space and opportunity for living in that area. Regardless of sympathies aroused for the homeless and destitute Jewish victims of the European debacle, the geographer views Israel as a poor asylum for displaced persons.

The new country contains some 8,000 square miles, about the area of New Jersey, but this includes the practically worthless desert of Negeb. On the remaining 4,600 square miles live almost all the population of about 1,390,000. This gives a density of around 300 per square mile, and these people depend primarily on agriculture that is largely olives, vegetables, citrus fruits and vines. Some of the irrigated soils already have become alkaline, and the water supply for this use is quite limited. Some contend that industry is the solution, but for this again the country is ill-suited. None of the great prerequisites of manufacturing are present in large quantity. Only scant and costly water power is available and no coal or oil; materials for processing are similarly scarce. But, writes Poole, "It is these basic considerations that appeal so strongly to the geographer which appear to have been overlooked by the general public in the welter of racial, religious, political and 'oily' arguments that have filled our newspapers and journals for so many years."

Pursuant to this trend in thought is a recent suggestion by a middle-aged, apparently successful business man who, being informed of the limited opportunities in Israel for the Jews, suggested that northeastern Africa be used for this purpose. After being instructed as to the aridity of that area he suggested using water from the Mediterranean for irrigating those desert lands. Such reasoning, or lack of reasoning, might well envisage much room for the Chinese in Sinkiang which has only six people per square mile, but Chang Chih-yi, who has investigated that large area, concludes that, according to opportunity, the land is already well filled. Also Griffith Taylor has pointed out the experience of Australia in building a railroad into her western desert. After many years, about the only settlers along it are those who operate the stations. The geographer would more readily agree with the work of Oliver J. Todd in reclaiming from the Yellow River two million acres of good farmlands.

International Relations

In the Western World Argentina has for some time been the country most estranged from inter-American activities. This applies not only to her role in the Pan American Union, but also to her attitude toward the United States individually. How can the geographer be of service in treating this topic, of which our public is so poorly informed, of which the attitudes of most people are based primarily on sentiment? Here the coordinator becomes largely an informer. Since much of the friction arises from commercial relations, a fairly recent listing of Argentine exports may be used effectively. Six of that country's leading exports definitely clash with United States products in our home markets. Once it is found that dissension rises from these items, which are basic in the economic structure of Argentine life, it becomes apparent that they are primary factors in her international relations. Consideration of Argentina's position then becomes realistic and meaningful.

Similar sentiment exists concerning prewar Japan. Only a cursory survey of that country and her resources reveals a critical situation. There the chief dependence of 70,000,000 inhabitants was on less arable land than that possessed by various of our individual states. For the United States as a whole the per capita arable land is 13 times that possessed by the Japanese. While knowledge of Japan's plight does not necessitate approval of her imperialistic tactics, it does clarify the Japanese side of the issue.

But at present the chief impasse lies between Russia and the United States, and the basis of disagreement is most complicated. Of all areas treated then, the geographer should exercise extreme care in handling Russia. What general course can be followed? As geographers we can steer rather clear of sentiment. In treating Russia, as with all areas and topics of controversial nature, a safe course is to clarify the causes of differences rather than to kindle fires of prejudice. Basic, factual material is important in this. The proper procedure would be to follow carefully the suggestion by George Cressey that "the ideal would be to teach Soviet geography in terms which would be equally acceptable in either country." How not to treat Russia apparently was well demonstrated recently in a panel discussion on that country by Dale Carnegie and H. R. Knickerbocker in which no mention was made by either of Russia's long struggle for access to the sea. The treatment somewhat resembled the child's school essay in which he defined boundary thusly: "The boundary is an imaginary line,

drawn through Ireland, between the good people and the bad. If it were not for the boundary, Uncle Joe would send us a goose for Christmas."

POPULATION-RESOURCE PROBLEM

Finally, the eventual climax in coordination lies in the population-resource problem. The fact that millions of people die annually directly or indirectly from lack of food is conclusive evidence that the problem is at hand. That the situation might rapidly become acute on a broadened scale is attested by the doubling of the earth population in the last century. In dealing with increasing numbers it has long been recognized that three alternatives exist. These are: 1. increased production of food; 2. migration; 3. starvation. Various parts of the world have gone far in the first. This applies to intensification of agriculture as in China, India and Europe; to commerce as the old Hanse cities; and to industrialization as in Britain, Belgium and others. But it is to be noted also that in most instances certain dependence is placed on foreign territory and that definite limitations have already been reached in territorial exploitation. As to the second, there appears a definite approaching end to migration, except lesser adjustments "to correct errors or in answer to the changes of technocracy." As Mr. Light puts it, "the world is all but filled, title determined, 'welcome' signs down, the land strictly posted against further trespass." The geographic transfer of large groups of people can be accomplished only at great cost and undue hardship.

Then, is there danger that the last will overtake us, that after all Malthus was right? Some conditions point in that direction. Estimates place land needs at 2.5 acres per person, but the earth's crop-producing area of four billion acres gives only 1.77 acres each. Sir John Boyd Orr declared that "even before the War two-thirds of the people of the world were undernourished all the time." Writes C. L. Walker: "in only a few short periods in history, and in only a few limited places on earth, has man ever had enough to eat. Even in modern times, in normal crop years, inadequate food has been killing him off at the rate of 20 to 30 millions a year." And now the population authorities are telling us that the total population is destined to double in 90 years. It is suggested that if India's death rate could be lowered to that of the United States, that country alone, "can fill five earths like our present one in a century."

Such conditions lend substance to *Road to Survival* and *This Plundered Planet,* but agriculturists point the way out by plant improvement and higher yields. "Yet gains in yield," again referring to Mr. Light, "mean only postponement, not victory."

Following these trends it seems that there is but one conclusion. With an unhampered rising population curve moving forward along a fixed or diminishing world resource curve, the two eventually must cross.

But where the coordinator? To him the general procedure remains little changed. What difference whether we agree with the preceding group or whether we accept Dr. Busch's thinking, that by utilizing minerals from the sea, there may be provided sustenance for any imaginable population. Whether for long or for short, however, the greatest survival can result only from complete coordination of all factors involved.

If we consider the earth as a unit, there is little place for tariffs, subsidies or cartels. With artificial barriers erased, the regions of the earth would be free to function according to opportunities naturally and culturally afforded. True, this type of program would necessitate reorientation on a vast scale. On the other hand areas thus affected, in general, would be those running counter to greatest efficiency, if earth-wide consideration be applied. Examples of improper functioning of areas are to be found in Spain where manufacturing is maintained under particular disadvantage and in Louisiana where sugar is produced at excessive cost.

Conversely, many areas are deprived of realizing equivalent advantages by barriers artificially erected, for the benefit of certain groups or sections. Argentine beef, Australian wool and perhaps English cottons fall into this category. Mexican oranges, far superior in size, quality and beauty to those of Florida, California or Texas, could be produced in large quantity and at low cost, yet they are kept off United States markets. Such policies can be counted as attempts to promote the nationalistic, regionalistic or localistic advantage of a people or group, and may be accepted as symptoms of maladjustment. So long as these practices continue the coordinator will necessarily be hampered by certain limitations, but coordination in the various parts is none the less needed. So there remains a definite place for the coordinator, and effort in that direction should not be stifled. Therein lies the hope of human progress.

ANIMAL, VEGETABLE OR MINERAL?

H. PHILLIP BACON
George Peabody College for Teachers

All teachers, and most students, understand the necessity of having periodic review sessions, particularly at the conclusion of a unit of work. Despite this recognized need, reviews too frequently fail to successfully accomplish their intended purpose and the class ends on a sour note after a dull period of questions by the tired teacher and attempted answers by the bored children. The average review session needs some type of vitamin injection to pep up its drooping performance.

PLAYING TWENTY QUESTIONS

The old parlor game of *Twenty Questions,* resurrected in recent years by radio and television from an undeserved grave, is familiar to most boys and girls. It may be easily adapted for classroom use and is especially helpful in stimulating interest in reviewing geographical material.

For playing *Twenty Questions* in school, the subjects to be guessed should be chosen from the particular unit being reviewed. The items selected must, of course, be classified as "animal, vegetable, or mineral." While this somewhat limits the material that may be utilized, it is amazing how much of the factual type information one deals with in elementary geography will fall into the necessary categories.

The class should elect two captains who will then choose the members of their team. The opposing teams should sit on opposite sides of the room. One team will ask the first question, the other will try to discover the answer. The team that is to ask the question should get into a group and decide upon a particular item from their review unit. It is the duty of the captain to quietly direct the discussion in the selection of the items. When they have decided upon a subject, the captain announces to the opposing team that they have an item that is either "animal, vegetable or mineral." (The teacher will sometimes have to help in determining this classification for the teams.) The teacher should act as the judge, keeping a record on the blackboard of the number of questions asked, since the opposing group is limited to 20 questions. If the team is able to find the correct answer in fewer than 20, they score a point;

if they fail to discover the answer, the team asking the question scores the point. The two groups take turns asking and answering the questions.

Conclusion

This simple little game offers a much greater opportunity for reviewing geographical material than is at first apparent. When a team takes its turn asking the question they review much factual information in selecting an item to challenge their opponents' knowledge. The group attempting to answer the question goes over the material they have learned from the unit in their efforts to discover the particular "animal, vegetable, or mineral" the other team has in mind. Thus, a large part of the work covered in both reading and previous class discussions will be reviewed in a period devoted to *Twenty Questions*. Not only will the boys and girls have a splendid opportunity for review, but the fun of playing this interesting and exciting game may be the stimulus necessary to pick up the spirits of teachers and students who have tired of the routine review session.

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THE NATIONAL COUNCIL AT WORK

The Executive Board, meeting in Buffalo, New York, in 1953, considered the advisability of making changes in the Constitution which would benefit the National Council. It was thought that the organization would be strengthened by having a larger Board in order to gain wider distribution in interests and participation, and to provide a better understanding of the organization for the members who carry on the work of the National Council. Such a proposal required changes in the Constitution and By-Laws.

An amendment to the Constitution requires: approval of the majority of the Executive Board; announcement to the members at least one month before the annual meeting; and finally, approval of the majority of the Assembly at the annual meeting. Two changes were approved at San Francisco at the session of the General Assembly. These are to read:

Article 4. Section 2. The officers of the National Council shall be a President, a First Vice-President, a Second Vice-President, a Secretary, a Treasurer, the Editor of the JOURNAL OF GEOGRAPHY, the Director of State Coordinators, and such other officers as the organization may from time to time deem necessary.

Article 4. Section 3. The Executive Board consists of the officers, the most recent three past presidents, and *nine* elected members.

An amendment to the By-Laws requires the majority vote of the Executive Board. Two changes have been made. These are to read:

Article 3. Section 1. Any member in good standing for the five consecutive years immediately preceding nomination shall be eligible for election to national office or to the Executive Board.

Article 7. Section 4. A quorum for the transaction of business shall consist of not less than *eight* members of the Executive Board including the President or First or Second Vice-President, and the Secretary, or his full instructed proxy.

This information brings up-to-date the data in the May 1952 issue of the JOURNAL OF GEOGRAPHY which was devoted entirely to a complete report on the National Council as a Working Organization. The above four amendments are effective as of February 1, 1955.

Student rates for the JOURNAL OF GEOGRAPHY are now available. The plan is as follows: subscriptions to be sent in blocks of five or more, cash with order, at a rate of $2.25 each. Now it is possible for more students to invest in geographic education materials that are functional and professional. Every member of the National Council who is teaching at college level should make an effort to find five or more students to become subscribers. Some day, these students will be our colleagues and potential members of the Council. All group subscriptions are sent directly to our business office, the JOURNAL OF GEOGRAPHY, 3333 Elston Avenue, Chicago 18, Illinois.

On January 6 and 7, 1955, Dr. Katheryne T. Whittemore, Head of the Department of Geography at State University College for Teachers at Buffalo, New York, represents the National Council of Geography Teachers at the inauguration of Dr. Clifford Cook Furnas as Chancellor of the University of Buffalo in that city. Thereby, NCGT is represented among the Learned Societies in attendance.

Forthcoming reports on this page will announce appointments to committees, the work of committees, and the continuing work of the National Council.

Members are invited and urged to write to the officers regarding the work of the Council. Do send in your suggestions for furthering the effectiveness of your organization. We all need to make some contribution to NCGT to keep it dynamic and add to its growing membership.

M. MELVINA SVEC
President

GEOGRAPHICAL PUBLICATIONS

O. H. K. Spate. **India and Pakistan: A General and Regional Geography.** E. P. Dutton and Co., New York, 1954. 827 pages, 160 maps and diagrams. $12.75.

Those geographers who have been eagerly awaiting Dr. Spate's new book will not be disappointed. *India and Pakistan* is a major contribution to the regional geographic literature of Asia.

The book is divided into four parts. Part I, "The Land," considers the geologic structure, relief, climate, vegetation and soils. Part II, "The People," covers the numbers, densities and major ethnic, linguistic and religious groupings of the people, and the caste system. The major historical events are outlined, and rural and urban settlement are discussed. Part III, "The Economy," is an analysis of agriculture, natural resources, industries, transport and trade. Part IV, "The Face of the Land," is a series of masterful descriptions of the major regions of the subcontinent, with an excellent chapter on Ceylon by B. H. Farmer.

It is evident that Dr. Spate has read widely in India's geography, history and literature. This is reflected in his writing, which is interesting, almost conversational in style, and spiced with revealing descriptive quotations. The maps are well done. Many are large scale, based on Survey of India topographic sheets, and are integrated with the regional descriptions. The only photograph is the frontispiece: a very poor picture of a relief model. It is a pity that photographs of this picturesque and colorful land were not included.

India, Pakistan and Ceylon are still in need of basic geographic field studies to explain their almost innumerable varieties of land occupance. The road ahead is long, but Dr. Spate's new book makes one less likely to lose the way.

University of Missouri HOWARD F. HIRT

Jack Bechdolt. **Oliver Becomes A Weatherman.** Julian Mesner, Inc., New York, 1953. 63 pages, 34 illustrations. $1.60.

This book, one of the Everyday Science Stories series, presents educational information in an entertaining and enjoyable manner. The plots are filled with excitement and suspense.

Descriptions thruout the book are accurate and in most cases detailed, and would encourage children to raise questions that would lead to new ideas and interests.

Oliver Ott, the story's hero, is attempting to forecast the weather for his fellow classmates, interest being promoted by what the weather would be for the big fall football game. The construction and use of his homemade instruments for placing a weather forecast bulletin on his school's bulletin board during the school year are well illustrated and should be readily understood by fourth to sixth grade students.

The construction of the wet-bulb thermometer is clear enough for the intermediate-grade pupil, but the explanation for its use seems hurried and lacking in detail. On page 22, "To tell how much moisture was in the air, Oliver had only to compare the reading of the wet-bulb thermometer with that of a regular thermometer." No relative values as to degree of humid or dry condition existing is presented, thus the student is unable to understand his readings.

The last 23 pages are devoted to Master Ott's interest in rain making and his possible production of a local snowstorm. Tho much accurate information on cloud seeding is unfolded, this portion of the book might better be classified as elementary science fiction—interesting reading, but far-fetched.

Altho the vocabulary and concepts in this book would place it at fourth to sixth grade level, the excerpts could be read to younger children.

Northern Illinois State Teachers College, DeKalb GEORGE P. STEVENS

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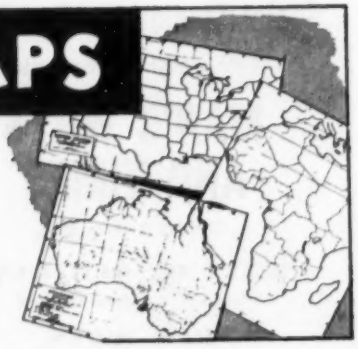

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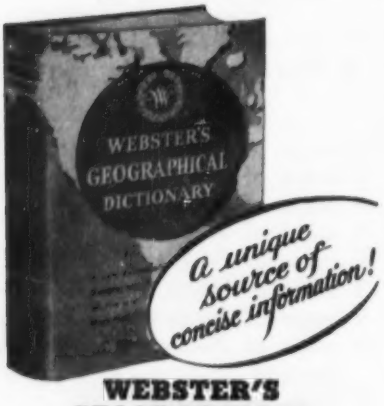

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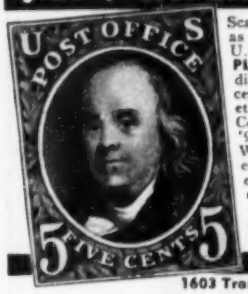

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